KPT 1092
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of Stephen W. Colley, et al. Art Unit 1624
Serial No. 09/806,184
Filed June 5, 2001
Confirmation No. 5402
For PROCESS FOR THE PREPARATION OF ETHYL ACETATE
Examiner Zachary C. Tucker

September 3, 2002

REPLY TO RESTRICTION REQUIREMENT

TO THE ASSISTANT COMMISSIONER FOR PATENTS,

SIR:

In response to the Office action mailed May 7, 2002, the time for response to which is extended three months to September 7, 2002 under 37 C.F.R. §1.136(a), applicants submit the following remarks.

The Examiner states that the claims of the present application directed to a process for the production of ethyl acetate do not share a common inventive concept and, accordingly, has requested applicants elect one of Groups I-IV listed at page 2 of the Office action. Applicants respectfully submit the Examiner's contention is without merit and request reconsideration and withdrawal of the restriction requirement.

The claimed invention is directed to the production of ethyl acetate by the dehydration of ethanol, the oxidation of ethanol or the oxidation of ethanol to acetaldehyde followed by the Tischenko reaction. The recovery of substantially pure ethyl acetate is more difficult in the case of these reactions as opposed to when the ethyl acetate is produced by esterification because these reactions form byproducts such as n-butyraldehyde and butan-2-one which have boiling points close to that of ethyl acetate.

However, applicants have solved this problem by taking an intermediate reaction product mixture comprising hydrogen and liquefiable products comprising ethyl acetate, ethanol and by-products containing reactive carbonyl groups and contacting at

NOT CLAIMED

least a portion of the liquefiable products of this reaction mixture with a selective hydrogenation catalyst in the presence of hydrogen in a selective hydrogenation zone to selectively hydrogenate the by-products containing reactive carbonyl groups to hydrogenated by-products comprising corresponding alcohols. NOT CLAIMED

The Examiner has relied on an article by Grootendorst et al. in concluding that selective hydrogenation does not represent a contribution over the prior art and, accordingly, the claims of the present invention do not share a common special technical feature which is a contribution over the prior art. Applicants respectfully submit that Grootendorst et al. is not relevant to the claimed invention because it relates specifically to the reduction of acetic acid to acetaldehyde and bears no relevance to the feature of the present application in which a dilute, crude reaction product comprising, *inter alia*, by-products containing reactive carbonyl groups, is subjected to hydrogenation in the presence of the other components to give the corresponding alcohols. Accordingly, Grootendorst et al. does not disclose the selective hydrogenation set forth in step (c) of claim 1. NOT CLAIMED

It should also be noted that the reaction of Grootendorst et al. is carried out on a composition which comprises a substantially pure stream, thus this reaction is a final clean up directed to producing the desired aldehyde product. By contrast, in the claimed invention the hydrogenation is carried out on a crude stream comprising a large number of components, including the carbonyl-containing compounds which are present in amounts consistent with being a by-product of the reaction. Further, the hydrogenation reaction of the present invention is directed to elimination of byproducts and does not produce the final product of the reaction, ethyl acetate, whereas Grootendorst et al. teaches a reaction to produce a desired aldehyde. As identified in claim 1 as steps (d) to (g), there are another 4 steps in the process subsequent to the selective hydrogenation. In these steps the selectively hydrogenated reaction product mixture is recovered from the hydrogenation zone and then subjected to

distillation to produce a first composition comprising substantially pure ethyl acetate and a second composition comprising ethanol and water. The second composition is then subjected to further treatment to reduce the water content. Applicants respectfully submit the Examiner has not considered these steps and, in particular, these steps in conjunction with the selective hydrogenation step discussed above.

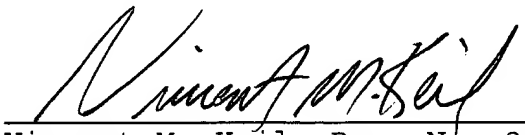
Accordingly, applicants respectfully submit that the claimed process which incorporates the selective hydrogenation of certain liquifiable byproducts containing reactive carbonyl groups to produce the corresponding alcohols does present a common special technical feature which is a contribution over the prior art and, accordingly, forms a single, general inventive concept under PCT Rule 13.1.

In view of the foregoing, applicants respectfully request reconsideration and withdrawal of the restriction requirement.

In the event the Examiner maintains the restriction requirement and in accordance with 37 C.F.R. §1.143, applicants hereby provisionally elect the claims of Group I, with traverse.

Applicants request an extension of time to and including September 7, 2002 for filing a response to the above-mentioned Office action. A check in payment of the applicable extension
* fee is enclosed.

Respectfully submitted,



Vincent M. Keil, Reg. No. 36,838
SENNIGER, POWERS, LEAVITT & ROEDEL
One Metropolitan Square, 16th Floor
St. Louis, Missouri 63102
(314) 231-5400

VMK/ACW
*Enclosure
Express Mail Label No. EL 945483665 US